Gazdar (1980) presents a semantics for directly conjoining expressions of nonsentential syntactic categories with and and or. The semantics can be grafted onto a set-theoretic semantics for fragments of natural language such as that in Montague (1973). Unlike the treatment of conjoined noun phrases and conjoined verb phrases in Montague (1973) (or that in Cresswell, 1973), Gazdar’s proposal does not reduce nonsentential conjunction to sentential conjunction. As Gazdar notes, the semantic rules for conjoining expressions of nonsentential categories, taken together with appropriate syntactic rules for generating such conjoined expressions, obviate the need for Coordination Reduction transformations. Conjoined expressions, of whatever category, may be generated directly from base structure rather than transformationally.

But Gazdar’s case is made only if the semantic interpretations yielded by his theory are intuitively correct. Gazdar’s semantic rules are grounded in set-theoretic interpretations of meaningful expressions. However, if common nouns are interpreted in the usual set-theoretic way, Gazdar’s rules do not generate the correct interpretations for common nouns conjoined with ‘and’.

Gazdar presents one phrase structure rule schema for conjoining expressions:

(1) \( a + a^* -/3 a \)

where \( 2 \leq n, \beta \in \{\text{and, or}\} \), and \( \alpha \) is any syntactic category.

For the semantic rules, we first note that the denotation of an expression will be either a set (e.g., a sentence denotes either the empty set \( \emptyset \) – if it is false – or \( \{\emptyset\} \)) or a function (e.g., a noun phrase denotes a set of properties – or a function from characteristic functions of sets of individuals into \( \{\emptyset, \{\emptyset\}\} \)).

Letting \( M(\alpha) \) be the denotation of the expression \( \alpha \) in a model \( M, \) the semantic rules for conjoined expressions are defined in terms of ‘generalized’ intersection and union:

(2) \[ M(\alpha_1 \cdots \text{and} \alpha_n) = \prod_{i=1}^{n} M(\alpha_i), \]

where \( X \prod Y = X \cap Y \)
if $X$ and $Y$ are not functions, and $X \prod Y =$

$\{(z, x \prod y) : (z, x) \in X \text{ and } (z, y) \in Y\}$ otherwise

and

(3) $M(\alpha_1 \cdots \text{ or } \alpha_n) = \prod_{1 \leq i \leq n} M(\alpha_i),$

where $X \prod Y = X \cup Y,$

if $X$ and $Y$ are not functions, and $X \prod Y =$

$\{(z, x \prod y) : (z, x) \in X \text{ and } (z, y) \in Y\}$ otherwise.

This proposal works admirably well for noun phrases and proper names, verb phrases, adjectives, and adverbs, as well as sentences. But, if we assume that common nouns, like intransitive verbs, denote (characteristic functions of) sets of individuals, the proposal generates the wrong interpretations for common nouns conjoined with and. Consider the sentences

(4) Every cat and dog is licensed.

and

(5) A cat and dog came running in.

The combination of Gazdar's and rule with the standard semantics for common nouns yields trivial truth for sentence (4) – the falsity of (4) would require the nonlicensing of some individual which is both a cat and a dog. By the same token, sentence (5) will be true only if an individual which is both a cat and a dog came running in. Neither of these predicted interpretations is correct. Sentence (4) is intuitively equivalent to

(6) Every cat is licensed and every dog is licensed,

and sentence (5) is equivalent to

(7) A cat came running in and a dog came running in.

To make the case that Coordination Reduction rules are unnecessary within a set-theoretic compositional semantics, something must yield: either Gazdar's rules or the standard interpretation of common nouns.

Perhaps it will be thought that Coordination Reduction gives the most